FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST-5297
CITY OF KETTLE FALLS

SUMMARY

The City of Kettle Falls owns and operates a wastewater treatment facility that consists of two bentonite-lined lagoons (1 and 2), two unlined lagoons (3 and 4), and spray irrigation of effluent to approximately 6.5 acres adjacent to the plant. The facility was constructed in 1975 and was last upgraded in 1981. Design population for the plant is 1,700. The current population of the town is 1,565. There are no industrial dischargers to this facility.

The City is currently in the process of completing a hydrogeologic study report and a facility plan that was required by their wastewater permit issued July 13, 2001. The City has lagged far behind in completing submittal requirements. The hydrogeologic scope of work was completed and approved by Ecology in April 2004. The study report has been submitted to Ecology and approved by Ecology on May 19, 2006. The facility plan that was due in January 2005 has not been completed and an extension to September 1, 2006 has been granted to the City for the submittal of the facility plan.

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. **ST-5297** . The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Eastern Regional Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. Changes to the permit will be addressed in Appendix D--Response to Comments

GENERAL INFORMATION	
Applicant	City of Kettle Falls
Facility Name and Address	City of Kettle Falls P.O. Box 457 Kettle Falls, WA 99141
Type of Treatment System:	Municipal discharge to land via spray irrigation
Discharge Location	Latitude: 48° 36' 30" Longitude: 118° 04' 00"
Legal Description of Application Area	Approximately 6.5 acres in the NE ¼ of S.19, T.36N., R. 38E.W.M.
Contact at Facility	Name: Joel Gassaway, City Superintendent Telephone: (509) 738-6821
Responsible Official	Name: The Honorable Ray Smith Title: Mayor Address: P.O. Box 457, Kettle Falls, WA 99141 Telephone: (509) 738-6821

BACKGROUND INFORMATION

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

HISTORY

The City of Kettle Falls is located in northwestern Washington, approximately ten miles north of Colville. (Stevens County) The population of the town is 1,535 residents. The population has grown some since the issuance of the previous permit, but has been fairly slow.

Primary income for the area comes from the timber industry, including lumber mills and logging. Commercial businesses include restaurants and other local business. There are no industrial dischargers to the facility.

COLLECTION SYSTEM STATUS

The facility was constructed in 1975 and consists of two bentonite-lined lagoons with a 10 mil PVC liner on the inner slopes of the earthen walls (Nos. 1 and 2) and two unlined lagoons (Nos. 3 and 4). In 1981, the addition of spray irrigation of effluent to approximately 6.5 acres adjacent to the plant occurred. The irrigation pump is on a stationary dock-type platform and draws water from either lagoon 3 or 4, and sends the wastewater to solid set sprinklers on the 6.5 acre field that is currently an alfalfa mixture. The treatment facility is rated as a Class 1 system and is staffed by one operator, as per WAC 173-230.

TREATMENT PROCESSES

The sewage from the City's collection system is transported to the treatment facility by a gravity interceptor sewer. At the plant, the interceptor discharges into a concrete structure where the sewage flows by gravity to a lift station, where it is pumped into a concrete diversion structure. The diversion structure is constructed with four weirs, and the sewage can be diverted to any of the lagoons. Typically, the inflow comes into lagoon 1 and gravity flows through 2, 3 and 4.

DISTRIBUTION SYSTEM (SPRAYFIELD)

During the period of April 1 to November 1, the wastewater is pumped out of lagoon 3 to a single, traveling reel sprinkler, which irrigates approximately 6.5 acres of crop. Crop type varies from year to year. There is no disinfection.

RESIDUAL SOLIDS

The treatment facility removes solids at the headworks in addition to incidental solids as part of the routine maintenance of the equipment. Solids removed from the headworks are returned to Lagoon #1. This practice should be discontinued, and all solids disposed of in a method consistent with Section IV of the facility's Operation & Maintenance Manual (see page IV-4).

PERMIT STATUS

The previous permit for this facility was issued on July 13, 2001. The plant was found to be in general overall compliance.

An application for permit renewal was submitted to the Department on December 23, 2005 and accepted by the Department on February 10, 2006.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on May 17, 2006.

During the history of the previous permit, the Permittee has maintained compliance with their effluent flow limit and have generally stayed under the design criteria for the plant. There is an ongoing history of high fecal coliform counts. (please refer to Table 1). This history is based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports. The proposed wastewater discharge prior to land application is characterized for the following parameters:

Table 1: Wastewater Characterization

Parameter	Concentration		
	min	avg	max
BOD_5	36 mg/l	44.7 mg/l	56 mg/l
TDS	358 mg/l	389 mg/l	443 mg/l
TKN	10.2 mg/l	20 mg./l	34.3 mg/l
Fecal Coliform	1280/100 mL		TNTC

SEPA COMPLIANCE

The plant was constructed prior to any SEPA requirements; however, a SEPA checklist was submitted on November 24, 1981 to the Department for the addition of the 6.5 acre sprayfield.

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

1. Compliance with the state Department of Health's requirement for municipal land application systems (DOH, 1994): a) that the effluent shall have a quality equal to or better than effluent from a waste stabilization pond (BOD, 45 mg/L; TSS, 45 mg/L); b) maximum daily effluent fecal coliform concentration to be no more than 200/100 mL; c) storage for at least seven days before irrigation; d) an irrigation and crop management plan with a goal of agronomic loading rates for nutrients.

The current facility does not meet these requirements. These limits will be placed in the next permit.

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Table 2: Ground Water Quality Criteria

Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units

The Department is unable to determine if background ground water quality is either higher or lower than the criteria given in Chapter 173-200 WAC.

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT ISSUED JULY 1, 1992

Table 3: Comparison of Previous and New Limits

Parameter	Existing Limits	Proposed Limits
Flow, monthly average	.05 mgd	.05 mgd
Flow, daily maximum	.102 mgd	.102 mgd

These limits have been in the permit since 1981 (the first permit issued) and there is no fact sheet to accompany the 1981 permit. In addition, there is no engineering report available to gain further information. The limits will continue to be the same until completion and review of the facility plan.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the proposed permit under Condition S2 and S3. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

Monitoring for Total Kjeldahl Nitrogen and Total Dissolved Solids in the effluent will be required to further characterize the effluent. These pollutants could have a significant impact on the quality of the ground water.

IRRIGATON AND CROP MONITORING PLANS

The proposed permit (Condition S2.D) requires that samples of harvested crop be analyzed. The purpose of this testing is required to demonstrate that the hydraulic and nitrogen loading to the fields are not in excess of the agronomic rate for the cover crop.

SOIL MONITORING

Soil monitoring at various sites within the land application area will be required (Condition S2.C). Specified monitoring frequencies take into account the importance of monitoring nutrient mitigation through the soil and the quantity and variability of the discharge.

GROUND WATER MONITORING

Facilities which are required to receive a state waste discharge permit must be in compliance with the Ground Water Quality Standards, Chapter 173-200 WAC. Therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation. The facility

has seven monitoring wells that were installed as part of a hydrogeologic study required by the Department. One year of monitoring has been completed as part of the study, and the City will be required to conduct an additional year of testing to obtain adequate information to determine the impact the unlined lagoons have on groundwater.

FACILITY PLAN

The City is in the process of completing a facility plan which must be submitted to the Department in adequate time for approval by the Department no later than September 1, 2006. The facility plan shall comply with all requirements of WAC 173-240 and shall include a hydrogeologic report demonstrating compliance with WAC 173-200 and the Implementation Guidance for the Ground Water Quality Standards. The plan should also include the City's plan for maintaining adequate capacity. The state's water quality law (RCW 90.48) requires that all dischargers must provide "...all known and available and reasonable methods .. to prevent and control the pollution of the waters of the state...", or AKART. To meet this requirement, a synthetic liner (e.g., HDPE or PVC) is generally required for all wastewater lagoons to protect ground water. Any other recommended liner system must be justified. The pending hydrogeologic study, will be used to determine whether the current earthen lined lagoons are built to acceptable standards to provide adequate protection to ground water.

Ground water quality standards were adopted by the state in 1990 (WAC 173-200). The goal of the standards is to maintain existing high quality ground water and to protect existing and future beneficial uses. These standards apply to any activity which has a potential to contaminate ground water quality. Wastewater impoundments, especially those that are unlined, have a potential to impact ground water. The ground water standards require that all wastewater systems that discharge to ground water or have a potential to impact ground water must protect for the upgradient background ground water quality

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-216-110).

FACILITY LOADING

The design criteria for this treatment facility are taken from the December 1975 Operations & Maintenance Manual prepared by Entranco Engineers and are as follows:

Monthly average flow (max. month):	.150 mgd
BOD influent loading:	255 lbs/day

The previous permit lists the Design Flow at .140 mgd. It is uncertain how this number was calculated; for purposes of this permit, the Design Flow listed in the engineering report will be used.

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). The Permittee is required to submit an engineering report when the plant reaches 85% of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report (WAC 173-216-110[5]). The facility consistently is near 85% of design capacity. Plans for maintaining adequate capacity shall be included in a facility report to be submitted in the next application cycle.

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water pollution the Permittee is required in permit condition S6. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the local health district.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires application for permit renewal 60 days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington.

REFERENCES FOR TEXT AND APPENDICES

Entranco Engineers, 1975. Operation & Maintenance Manual for Wastewater Treatment Facilities, Entranco Engineers, December 1975.

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on February 22 and March 1, 2006 in the Colville Statesman-Examiner to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

This permit was written by Cynthia Wall

APPENDIX B--GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

APPENDIX C—SITE MAP

APPENDIX D--RESPONSE TO COMMENTS